

IN THE CLAIMS:

1. (Currently amended) ~~Earth~~ An earth leakage protection device comprising:

~~[-]~~ an input ~~designed to be connected~~ for connecting to a measuring toroid of an earth leakage current,

~~[-]~~ comparison means for comparing a signal representative of ~~an~~ said earth leakage current with a reference threshold,

~~[-]~~ processing means to command a trip relay for opening main contacts when an earth leakage fault is detected,

~~[-]~~ rectifying means for receiving at least one signal representative of an earth leakage current, and

~~[-]~~ filtering means, connected to the rectifying means, for:

~~filtering to filter~~ a rectified signal supplied by the rectifying means;

~~supplying and to supply~~ a filtered rectified signal to said comparison means; and

matching a set of defined fault signals including impulsion peaks.

2. (Currently Amended) The earth leakage protection device of Device according to claim 1 wherein the filtering means ~~comprise~~ comprises a low-pass filter having a cut-off frequency ~~comprised~~ between 2 and 4 times the fundamental frequency of an electrical power system.

3. (Currently Amended) The earth leakage protection device of Device according to claim 1, further comprising an integrated circuit comprising:

[-] an amplifier receiving input signals,

[-] the rectifying means a signal rectifier connected on to an output of the amplifier,

[-] at least a first part of the filtering means connected on to an output of the ~~amplifier~~
rectifying means and comprising a filtering output,

[-] a comparator connected to said first part of the filtering means,

[-] control means comprising a time delay device to monitor tripping and non-tripping
times connected on to an output of said comparator, and

[-] a tripping control output connected on to an output of the ~~control processing~~ means.

4. (Currently Amended) The earth leakage protection device of Device according to
claim 1 wherein the filtering means ~~comprise~~ comprises a first internal part with a resistive
element arranged in an integrated circuit and a second external part with a capacitive element
arranged outside said integrated circuit and connected to the internal part by ~~means of~~ a filtering
output.

5. (Currently Amended) The earth leakage protection device of Device according to
claim 4 wherein the ~~filtering means comprise~~ a first internal part ~~comprising~~ comprises two
buffer circuits to command a current mirror ~~designed to reference~~ that references a filtering
signal to a power supply line or a reference line.

6. (Cancelled.)

7. (New) An electrical switchbox, comprising:

main conductors and contacts connected in series,

a measuring toroid of an earth leakage current surrounding the main conductors,

a trip relay for opening said main contacts;

an earth leakage protection device connected to said measuring toroid and said trip relay,

said earth leakage protection device comprising:

an input for ~~e~~onnecting connection to said measuring toroid,

comparison means for comparing a signal representative of said earth leakage

current with a reference threshold,

processing means ~~to~~ command for commanding a trip relay for opening main contacts when an earth leakage fault is detected,

rectifying means for receiving at least one signal representative of an earth leakage current, and

filtering means, connected to the rectifying means, for:

filtering a rectified signal supplied by the rectifying means;

supplying a filtered rectified signal to said comparison means; and

matching a set of defined fault signals including impulsion peaks.

8. (New) An earth leakage protection device, comprising:

an input configured to receive a signal representing an earth leakage current;

a comparison circuit configured to compare said signal representative of said earth leakage current with a reference threshold;

a processor configured to open main contacts in response to detection of an earth leakage fault;

a rectifying circuit configured to receive at least one signal representative of an earth leakage current; and

a filter circuit, connected to the rectifying circuit, configured to:

filter a rectified signal supplied by the rectifying circuit;

supply a filtered rectified signal to said comparison circuit; and

match a set of defined fault signals including impulsion peaks.

9. (New) An earth leakage protection device, comprising:

an input for connecting to said measuring toroid of an earth leakage current,

comparison means for comparing a signal representative of said earth leakage current

with a reference threshold,

processing means to command for commanding a trip relay for opening main contacts when an earth leakage fault is detected,

rectifying means for receiving at least one signal representative of an earth leakage current, and

filtering means, connected to the rectifying means, for:

filtering a rectified signal supplied by the rectifying means;

supplying a filtered rectified signal to said comparison means; and

matching a set of defined fault signals including impulsion peaks;

wherein said filtering means comprises a first internal part with a resistive element arranged in an integrated circuit and a second external part with a capacitive element arranged outside said integrated circuit and connected to the internal part by a filtering output, and said first external part comprises two buffer circuits ~~to command~~ for commanding a current mirror that references a filtering signal to a power supply line or a reference line.